

LARGE FREE PATTERN SHEET INSIDE

Hobbies

WEEKLY

CONTENTS

	Page
Model Swing Bridge	1
Casting Lead Toys	3
Simple Wooden Gun	4
Home-made Xmas Cards	5
Things to Know	6
Metal Work	7
Home Printing	8
Accessories	8
A Playing Card Box	9
Fishing Stool and Rod Rest	10
Xmas Card Patterns	11

SUPPLEMENT DESIGN
SHEET FOR A TABLE
BOOK HOLDER

October 6th, 1948

Price Threepence

Vol. 107 No. 2762

A Working Model of a SWING BRIDGE

WE are giving our model makers another interesting piece of work this week in the form of a Swing Bridge. It is made wholly from wood, and it stands on a base board measuring 14ins. by 9ins. by $\frac{1}{4}$ in. thick. The completed model is shown below but in this sketch a more or less imaginary view has been introduced, showing realistically the canal or lock-gate channel over which such a bridge would span.

We are indebted to Messrs. Horsley Bridge and Thomas Piggott, Ltd., of Tipton, Staffordshire, for illustrations as a guide for the model. This bridge, however, is not true in its full sense.

It does, nevertheless, amount to more than a mere toy, and could be added to in many respects to make realism in a more finished model.

Type of Bridge

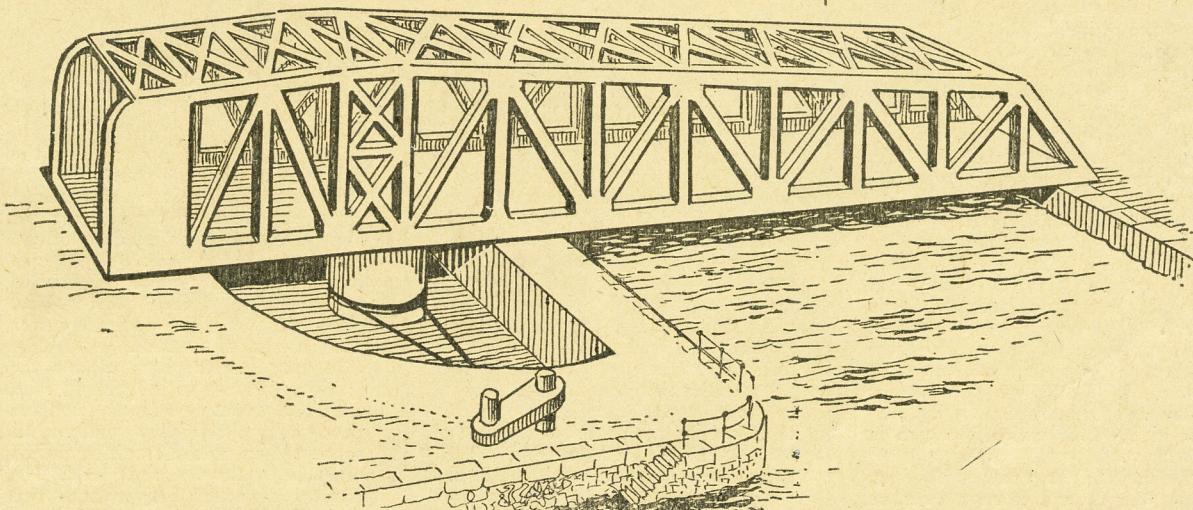
The bridge is of single-span to swing across a river or canal. The mechanism, causing the bridge to open and close, is partly below ground, but there is a semi-circular "well" in which the bearing of the bridge works and is pivoted.

The turning action is by a belt which passes round the main support and runs along to an "underground" vertical shaft at the top of which, and above ground, is located a crank and

handle. All this is clearly seen in the sketch and is described here in detail.

Commencing to make the model, we cut a piece of $\frac{1}{4}$ in. wood 14ins. by 9ins. in size, to form the base. At one end of this piece, glue on two thicknesses of $\frac{1}{8}$ in. wood glued together to make the pier or landing for the extended end of the bridge. At Fig. 1 we see these pieces which are 9ins. long by $1\frac{1}{4}$ ins. wide.

Next there are three pieces of $\frac{1}{8}$ in. wood to form the main ground work for the working end of the bridge. These are seen also in Fig. 1, as A, B and C, and the measurements to which they will be cut are all shown on the pieces A and C. The radius of



2 $\frac{5}{8}$ ins. for the circle is got from a point 1 $\frac{7}{8}$ ins. in from one edge, while the narrow border edge facing the pier is $\frac{3}{4}$ in. wide in both A and C. (Fig. 1).

On piece A, however, the front strip may be cut right through and afterwards glued up as shown. Note must be made of the gap on the left of the diagram of piece A. This is formed for the power belt to work in, the upper piece, C, covering it over. The position for boring the holes for the vertical spindle is shown on piece

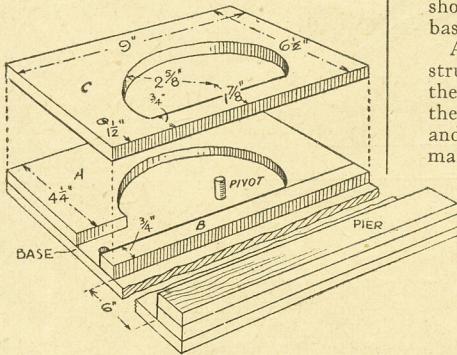


Fig. 1—Base with pivot pin

C as $1\frac{1}{2}$ ins. back and it should be $\frac{3}{4}$ in. centre from the edge.

It would be best to set out the whole shapes of the two pieces, A and C, on to paper, and then to lay this pattern on the wood and either prick through the various points ready to connect up in pencil, or to transfer the outlines by means of carbon paper direct to the wood. Pieces, A and C, can now be glued together, and piece B also glued to the underside of C.

Spindle and Crank

Before these pieces can be glued to the main base, the spindle and crank shown as D, E, F and G in Fig. 2, should be made. First cut a piece of $\frac{1}{4}$ in. round rod, D, $1\frac{3}{4}$ ins. long and round off one end which will come above the ground level.

Next, make the washer, E, from $\frac{1}{8}$ in. or $3/16$ in. wood $\frac{3}{4}$ in. diameter. This must fit tightly on the spindle, leaving $\frac{1}{16}$ in. clear below it. The crank, F, is made about $1\frac{1}{4}$ ins. long and $\frac{1}{2}$ in. wide at its widest point. A short piece of rod is glued into this to form the handle, G.

Having then the four components cut neatly and cleaned up, first glue on the crank, F, to the spindle, D, and then insert the end of the latter through the ground section, C. The spindle should turn freely but not loosely in piece, C. Now put on the washer, E, allowing, as stated, a distance of $\frac{1}{2}$ in. below it to act as pulley and end to work freely in a hole in the base which is shown in Fig. 1.

The main base can now be glued on, or if desired, and it may even be preferable, to screw the base to the pieces, A and B, in case it is found

necessary to make certain adjustments to the spindle, etc.

Before commencing construction of the actual bridge, a glance at Fig. 3 helps to give an idea of the working parts. The main base is here shown with pieces, A, B and C, and the outer pier all in position on it. The pivot round which the bridge will swing is formed from a piece of round rod $\frac{1}{4}$ in. diameter and 1 in. long.

The position of this pivot is shown in Fig. 3 and its centre should come 4½ ins. from the edge of the base, as shown. Glue the pivot firmly in the base.

At Fig. 2 we see the simple construction in outline. There are only the four pieces connected with it, and these consist of the floor, two sides and the top. First then, line out and make the floor 12ins. long, $1\frac{1}{4}$ ins.

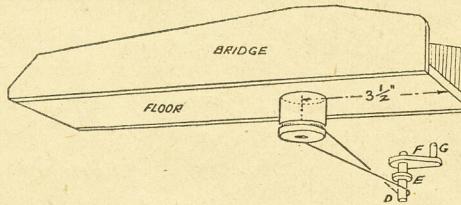


Fig. 2—Underview of turning mechanism

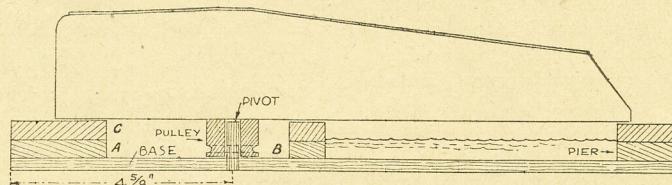
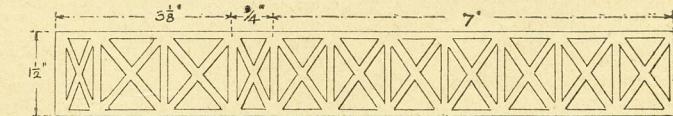


Fig. 3—Section of bridge, base, piers and pivot



wide and $\frac{1}{4}$ in. thick.

wide and $\frac{3}{4}$ in. thick.

Next make the sides, and here is where the test of patience and good cutting will tell, because they are both of lattice work girder principle. In Fig. 4 we have the diagram of one of the sides set out with all necessary measurements for drawing out on to paper or on to the $\frac{3}{4}$ in. wood direct. It would be preferable to make the diagram full size on paper.

Two pieces of the $\frac{1}{8}$ in. wood should be pinned together, with the pattern, then stuck to the upper surface ready for cutting with the fretsaw. The two sides are thus cut in one operation. When cut and cleaned up they are glued and fret-pinned to the edges of the floor as shown in Fig. 2. The

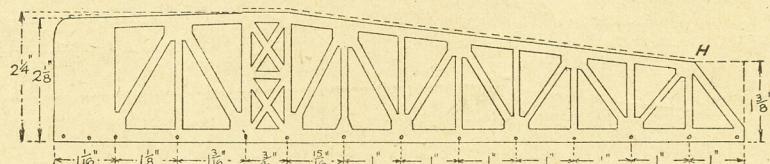
lattice work top to the bridge which connects the two sides is made from fairly stout cardboard, to the pattern given in Fig. 5.

Girder Pattern Sides

Measurements are here given, but the lattice work and the uprights can be got quite simply by following that of the sides of the bridges as seen when the two diagrams are placed together side by side as Figs. 4 and 5. When a clear pencil line has been made of the complete pattern, and the same transferred to the card, all the cutting through of the spaces can be carried out by using pieces of safety razor blade.

In gluing on the card top to the sides of the bridge, fix the end marked H first, gradually pressing down the card until it comes to the wide end where it may

wide end where it may be reinforced underneath by gluing small angle blocks or fillets about the size of wood matches. Gently clean up the surfaces of the wood parts and the card and paint up or stain to individual taste.



*Fig. 4—How to mark out the lattice side of the bridge
Fig. 5—(above) The lattice-work top to bridge*

The underneath support to the bridge where it rests over the pivot consists of an ordinary cotton reel trimmed round and cut to length of $\frac{3}{4}$ in. A deep groove should be formed round the pulley (Fig. 3). After a final clean up, the pulley is glued to the underside of the floor at $4\frac{1}{2}$ ins. centre, so that it fits accurately over the pivot bar of the base.

It only remains now to put the finishing touches to the bridge, then it can be placed over its pivot on the floor and the pulley underneath connected up to the crank by means of a thin cord or an elastic band. The channel of water between the two piers could be represented by a piece of glass measuring about 9ins. by 6ins.

Hints on how the amateur can easily undertake CASTING LEAD TOYS

CHRISTMAS is a time when lead toys, such as soldiers, men on horses, tanks, guns, etc., sell like hot cakes. Of course, these sell easily most of the year round—if low in price. It is, however, towards Xmas that "trade" is good, not only for a shopkeeper, but the manufacturer. Both can show a profit that is reasonable and satisfying.

There is another side to lead toy manufacture. You may, perhaps, have built a model fort and require a regiment of men, with officers. By buying a couple of moulds, you can cast all the men you want—dozens and dozens of them, providing you have plenty of scrap lead. Unfortunately, there is rather a shortage of old lead these days, and as for new stuff, the cost is too high.

Now, to help in keeping down the amount of lead required, manufacturers of toy moulds design the latter so that models are not too bulky—some are quite flat, in fact. This in no way spoils the appearance of the models, but it does certainly save precious lead.

On the other hand, there are moulds which seem to require an awful lot of lead before filling up. These are avoided by the wise home manufacturer, and amongst such heavy castings may be mentioned the larger scale models of individual soldiers, men on horseback, etc.

The More Popular Size

The more popular scale is the 2½in. high class. In other words, soldiers, officers, etc., stand no higher than 2½ins. Men kneeling, lying full

length, etc., are all in proportion to the height of 2½ins. Some models may be 2½ins. or 3ins. high, but this is merely the overall height, as the models may have an arm upraised, or may be shouldering a rifle and so on.

Such models are fairly easy to cast. Often, however, as in the case of the soldier illustrated, there is difficulty in having full detail reproduced in the casting. The gun barrel, or its magazine, for example, is rather thin, and the lead must be poured in via the head end. This means that the lead must work upwardly and horizontally within the mould. Lead, properly melted, will do so easily enough.

Heating the Metal

It must be "boiled" lead, however. By "boiled" lead, it is meant lead which, upon melting, is heated long after the melting point has been reached. At the beginning, too, the aluminium mould should be heated slightly. If cold, it chills the first casting, and the result will be an incomplete model.

There is no need to "soot" the inside of the mould with the flame of a candle. A "lining" of soot will facilitate the removal of the casting, of course, but the soot is apt to spoil the reproduction of detail.

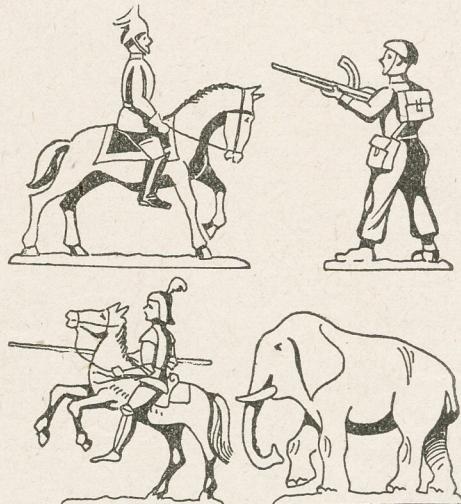
Quite a variety of items can be cast in lead. Apart from modern soldiers, tanks, ships, etc., there are such things as knights in armour, farm-yard animals, domestic and wild animals, and so forth. Moulds are made in brass or a hard aluminium alloy. A complete mould consists of two halves which, by a couple of pins, engage properly together. The halves shown are typical of other moulds.

As the moulds get extremely hot after the first few castings, they need to be held with wooden handles. These handles, which can be rough pieces of wood, fix upon a screw attached to each side of each half of the mould. Alignment of the two halves must be perfect, otherwise a noticeable "join" will be seen in the castings, which means trimming all the time to

have the models really looking like models.

Casting a Model

We will assume you have a mould, such as the type shown, and some scrap lead and a melting ladle. The latter can be a type as used by plumbers, or a substitute, such as an old aluminium soup ladle, or even an



A few examples of toys which can be cast in lead.

ordinary cocoa tin with a pouring "lip" bent in its rim.

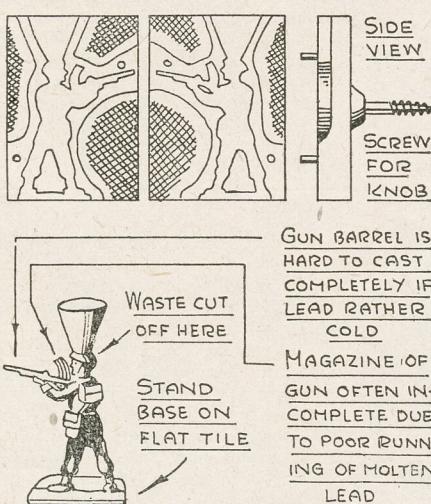
The tin, however, like the aluminium ladle, will burn out in time. Moreover, a tin, or the aluminium ladle, does not preserve the heat in the molten lead to the same extent as an iron ladle. Lead has a low melting point of 620 degrees F. Aluminium is much higher, but in attempting to "boil" the lead in the manner previously mentioned, it is quite possible that the aluminium melting point will be reached. A zinc ladle is worse again. Iron is the best metal so far as melting ladles are concerned.

The Two Moulds

While the scrap lead is melting, fix the mould halves together, using a clip bent from a strip of sheet metal. Fix wooden handles to the handle screws, then set the mould, pouring inlet upwards, on a flat tile or piece of metal.

When the lead has melted sufficiently, draw off any scum floating on the top, then proceed to pour the lead, in a fine continuous stream, into the mould. Fill the inlet hole right up to the top and tap the mould lightly so the lead "settles"

(Continued foot of page 4)



The two halves of a mould for casting the soldier illustrated.

From a few odd bits and pieces can be made a SIMPLE WOODEN GUN

HERE is a realistic gun made with the simplest of materials.

It can be constructed with or without the leading wheels. The latter are, of course, fitted to artillery for transport purposes, being uncoupled when the piece goes into action.

The model copies no special type of gun but has the general characteristics of several kinds and when completed looks quite good.

The Wheels

The wheels are two "slices" cut from a section of circular rodding, say an old curtain pole, and as the general size of the gun depends greatly on the size of the rodding you can get, no dimensions have been given in the diagram. Once, however, you have obtained the discs for the wheels, dimensions for the rest of the gun can readily be gauged.

When cutting discs from circular rodding it is always best to use a fine saw and cut to a rather generous width at first, taking the discs down to the thickness desired by rubbing "flat", on suitable glasspaper secured to a perfectly level surface.

Centres, too, must be carefully found, but this is not hard using a compass. With the central leg placed against the disc the compass is swung and marks made at both sides, where the pencil strikes the circumference. Now move the leg to one of these intersections and swinging again from circumference to circumference make two more small lines where the circle is cut. Now join the opposite pairs of marks and the point at which the lines so formed cross one another is the centre. Using a fine pencil this gives the desired location very accurately.

Once found, drilling should be carried out with some care, as nothing looks worse than wheels running out of centre.

Gun Body

The main body of the gun is the

Lead Toys—(Continued from page 3)

properly. Tapping helps to release trapped air.

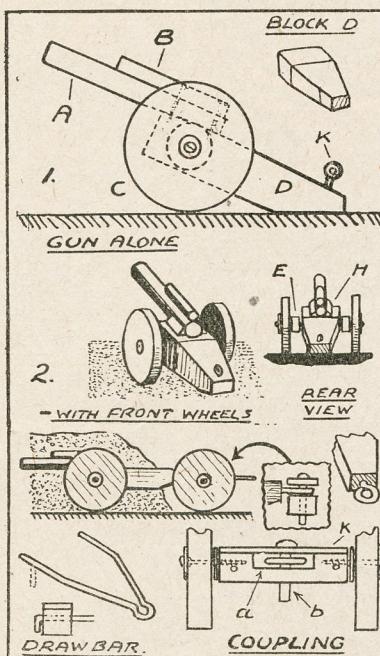
In a few minutes, the casting can be removed from its mould. Do not try to cool the mould under a water tap or by dipping into cold water.

Touching Up

The casting may cling somewhat to one of the halves. By gripping the "spud" of unwanted lead at the head end of the model with nippers, the casting can be taken away. Do not use great force, otherwise the model will be bent out of its true shape.

block (D). This is shaped out of one piece, the sketch showing the general configuration.

At the back, the under side is cut away to make the gun stand well and the width at the axle end is such that the wheels will require the two spacers



(E) to give the finished gun a well-balanced appearance. The wheels themselves are attached by long small-diameter screws.

Barrel

The barrel is a length of dowel about half as long again as the diameter of the wheels. A shorter piece is also required for the top (B) as shown.

Both pieces are attached to the block (D) by two long modelmaker's pins and two triangular pieces (H) are fitted, either by further pins or glue, to give extra strength and to add to

the appearance of the finished model.

If making the gun alone, a further addition is the "screw eye" fitted at the end of (D). This both gives the impression of an item of equipment and acts as a place to fasten a "pull-about" string if so desired. The front wheels, however, finish the model off best and are well worth making.

Coupling Unit

In attaching toy guns to front axles the trouble is that unless a special coupling is made the rear part tends to pull the front section to an unsightly angle—hence an ordinary hook and eye coupling will not do. The coupling shown in the sketch, however, is quite satisfactory.

The front axle is cut out as (a) so the flat part in the middle is about level with the screws through from the wheels. A second strip (K) is then fastened on top by two or three small sprigs.

A hole is now bored down the exact centre of the axle and strip (K) into which a short bolt (b) can be dropped. A screw-eye is firmly secured horizontally in the end of the main block (D) and the coupling is complete. The parts are joined by slipping the hook-eye through the slot in the axle and dropping the bolt through the holes. A small length of chain would keep the bolt from being lost and retain it as a definite part of the model.

This coupling is very strong and keeps the front axle level (which is the main thing) when the gun is pulled along. It also allows of steering and is "universal" in action.

To be quite modern, a simple wire draw-bar is fitted. This is easily shaped out of wire and is attached by the ends going through two horizontal holes. The ends then being bent over.

A draw-bar of this type will do to attach a "pull string" or make it so that the gun can be fastened behind some already existing toy trailer. The gun is finished in buff with patches of dark green to give the impression of camouflage.

The spud of lead is removed with the nippers and the roughness touched up with a file. Joint trimmings are removed by paring with a penknife, and the model is ready for finishing. If incomplete, it will have to be re-cast. After a few trials, of course, you will get into the way of casting models in lead.

Finishing

Special art enamels of a non-poisonous nature should be used for finishing lead toys in colour. The best kind of finish is cellulose paint

which has the advantage of drying rapidly. Models are ready for packing or handling in about an hour, in fact. Ordinary enamel paint takes about 24 hours to dry.

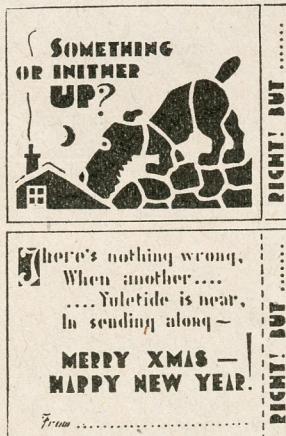
Use natural colours, incidentally. If a tunic is red, paint it red. Boots are usually brown or black. The base is either brown or green. Horses may be black and white, brown or dappled. Soldiers in battledress, to give variety, can be in various colours, such as brown, dark blue, red tunics, with blue trousers and black boots, etc.

Patterns, and particulars on how you can make HOME-MADE XMAS CARDS

ALTHOUGH Christmas may seem a long way off it is not too early to prepare your own Christmas Cards. Here, and in subsequent articles are details and diagrams of a simple, inexpensive and pleasing method.

Christmas cards printed from home-made lino blocks sometimes look amateurish in comparison with the results produced by the stencil process—a new technique devised by the writer, tested and found successful—even on blotting paper! An example of what can be done is shown at Fig. 1.

Other suggestions are provided, and it will be seen that quite a lot of varied work can be accomplished with stencils. Furthermore, lino blocks have to be cut in reverse. This is not the case with stencils. One can plan out the design as it will appear on the finished card, and if



desired, the design—providing there is no lettering introduced into it, such as the words "GREETINGS" or "KIND THOUGHTS"—can be printed in the reverse way to make a change in appearance.

For Everybody

The preparation of the stencils and the printing of the cards constitutes an ideal hobby for most individuals, whether young or old, of either sex. It will be of particular interest to those with enterprise and a natural aptitude for art and neatness in doing things.

One has three months in which to prepare cards for the festive season.



Fig. 1—Completed card showing attractive novelty and modern appearance

Dozens of simple attractive colourful greetings cards are possible. One may sell them wholesale to shops or retail them to "regular" customers, the latter procedure ensuring more profit, of course.

Card Manufacture

When the stencils are cut and set for printing, cards can be turned out at the rate of one complete card every 3 minutes. By "complete" card, a card bearing three different "impressions" is meant, i.e., it may have a front design, an inside back greetings section and an inside front verse section.

A two-impression card is illustrated at Fig. 1, actual-size impressions being provided as patterns on page 11. The wording is unusual, but novel and striking. It will be noticed that there is a great deal more in the phrase "Greetings from me to the friend I can always say I have found sincere!" than there seems at first glance.

When the card paper is properly folded, as at Fig. 1, we find that only the end letters of the greetings phrase are shown and these give us the words "See inside!" Thus, you save time and obtain extra words, apart from providing novelty and originality. Naturally, if you wish to cut out the special big kiss, you can do so; but some people might like to see it on the card, so include it in your stencil when preparing it.

Making the Stencils

The writer made his stencils from sheets of exposed undeveloped X-ray film. This film, by the way, is

double-sided, super-sensitive stuff, light khaki in colour. A complete sheet of the film (12ins. by 10ins.) provides four 6in. by 5in. sheets, the next largest size (15ins. by 12ins.) giving two extra portions.

The 6in. by 5in. portions just suit the dimensions of the greetings card paper, when folded (see Fig. 2), with enough overlap to prevent smudging the paper with the stencilling brush. A ream of plain white water-marked "bond" typewriter paper is suitable material for card manufacture, using quarto size (10ins. by 8ins.).

You are, no doubt, wondering where you can obtain exposed undeveloped X-ray film. The best place is a local hospital. Accidents will happen, and as spoiled X-ray film is useless for any other purposes, the X-ray operative may give away such film, for it is usually destroyed or thrown out as waste.

It is better to try and obtain undeveloped film, because one can pencil lettering and design on its emulsion surface. Mistakes can be erased with a soft rubber, and besides, if one side becomes badly

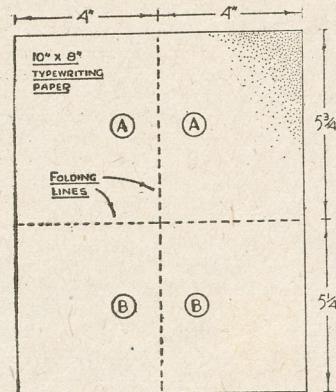


Fig. 2—How the typewriting paper is folded into four section

smudged, the reverse side can be used.

If only old developed film can be obtained, this resembles ordinary photographic film. In order to use it, it is necessary to wash off the emulsion from both sides, this leaving a clear blue-tinted transparent celluloid sheet. All the stencil designs and lettering need to be first pencilled on paper and the cut size of film thumb-tacked on top to prevent shifting when cutting the stencil.

(To be continued)

This is the First Issue of Volume 107

In buying and selling there are always certain THINGS TO KNOW

IN these times of shortages, restrictions and high cost of living, it makes one to be on the alert and keep an eye on the activities of possible "spivs" in all our dealings with various people, particularly strangers. We need to use sheer common sense.

The trouble is, of course, that many of us never realize we are regarded as "easy pickings". We just wonder why all sorts of things are offered us, or palmed off on us. Here, then, are a number of "cases" which are worth reading about.

* * *

IRECENTLY purchased a fine-looking portable gramophone in perfect working order, apparently. When I got it home, wound up the spring, and tried to play a record, the motor could not take the strain. It got slower and slower until it stopped. When I tried it, before buying, the turntable seemed to revolve properly. I cannot understand how I have been tricked.

YOU might have been hoodwinked deliberately, or it is just possible that the secondhand gramophone might have been repaired by its owner before disposing of it, such as the spring, which is obviously, rather weak from improper hardening and tempering. The entire spring, rather than the broken parts of it, has been tampered with, spoiled, and the machine sold as being in perfect mechanical order. In view of the fine appearance of the gramophone, it would be worth while having a new spring fitted, and if the dealer had done this, he might have got a better price. If you obtained the machine at a low bargain price, this proves that the dealer realized the spring was weak and worthless and made due allowance for the cost of the fitting of a new spring, in which case you can hardly complain. Dealers often sell things at the face value, and if you are wise, always have the article thoroughly tested in every way before purchasing it.

* * *

ALARM clocks, as you know, are scarce and expensive. I got a good secondhand clock the other day at a market. The man had it sitting on its back on the stall counter, and the clock ticked lively and merrily. He held it up for me to see, turned it all about, and set it down again, as before. I thought nothing of this, and bought the clock. When I got home, it had stopped. I wound it up a little, set it on its legs, and after ticking for a few minutes, it stopped. It stopped repeatedly in this way, and finally placing the clock on its

back, I found that it continued to tick and keep going. But, must I always have it lying on its back?

WELL, no, it may only require some little adjustment, perhaps cleaning and oiling. Dust and fluff may have gathered round the balance wheel and is interfering with the action. A hair could do this. Alternatively, the pivot points of the balance wheel spindle may be slack in their bearings. Play safe, and let an experienced clock-repairer adjust the clock mechanism and overhaul the works, if necessary. When you saw the clock on its back, and returned to the same position, did not some sixth sense warn you that something was amiss? It always pays to heed these fleeting warnings which occur at times to all of us.

* * *

I BOUGHT a dandy folding camera, a type I have always wanted, at a "I-buy-anything" store. It was an expensive model, and I gave a good sum for it. Unfortunately, I find that many of my best snaps are "clouded" sometimes, as though I had let sunlight shine into the lens. In appearance, the camera is very new, as if hardly used.

A new-looking, expensive camera, at a bargain price, is apt to make the best of us too hasty in making a purchase. Where secondhand cameras are concerned, the first rule is to test it for pin holes, particularly the bellows type. Being so new in appearance, you doubtless did not feel that such a test would be necessary. But it is, no matter how a camera looks. That is where you made a bad mistake, and we think that if you inspect the bellows carefully, you will find a small pin-hole or opening somewhere in the folds of the leather. A patch of black cloth adhered within the bellows, will rectify matters.

MY mother recently sent a gramophone cabinet to an auction. It was a good type, hardly ever used, and in good condition. A few weeks later, she received a cheque for the grand total of 40 shillings. The cabinet cost eight guineas pre-war, and would be worth three times that much these days. Surely this is ridiculous?

IT is not only ridiculous, but a shame, although it is not the fault of the auctioneers. Your mother, if she had been wise, should have offered the cabinet gramophone for sale at a fixed minimum price, which would be fair to both the owner and the buyer. This would have been arranged by mutual agreement between your mother and the auctioneer. These days people prefer radio-gram cabinets. There were probably few interested buyers. The woodwork of the cabinet alone, however, was really worth more than £2. The motor itself was worth £2. The bidder must have realized what a wonderful bargain he was getting. You must however realize it is all a question of supply and demand and whether the right people are at the auction.

BOYS - MEN!



Give your
varnishing &
polishing that
professional
look!

Here is a unique new
woodworkers' Varnishing
and Polishing kit produced
by specialists for you. It contains 1 Jar Rustin's Stain, 1 Jar
Varnish, 1 Jar French Polish, 1 Jar 'Kwiksolv' Paint Remover,
1 Bottle Linseed Oil, 1 Bottle Thinners, 1 Bottle Methylated
Spirit, 2 Sticks Wood Stopper, 1 Tin Woodfiller, 1 Polishing
Rubber, 2 Sheets Glass Paper and Full Instructions. Complete
from your local store or carriage paid 10/6d. Get your outfit
to-day.

FROM STORES
ON
CARR.
PAID

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The second of our interesting articles how to do HOME METAL WORK

CONTINUING our series of articles of metal work for the amateur, we deal, in this second article with soldering. The handyman about the house should be able to solder just as easily as he can fix a kitchen shelf, or put new hinges on the door. Leaking buckets and pans find their way into the dustbin when ten minutes with a soldering iron could make them useable again. Perhaps an effort has been made and the pan or bucket is adorned with unsightly blobs of solder which entirely fail to stop the leak.

Yet—soldering is really quite easy providing you observe the rules. Of these, cleanliness is by far the most important. Ninety per cent. of

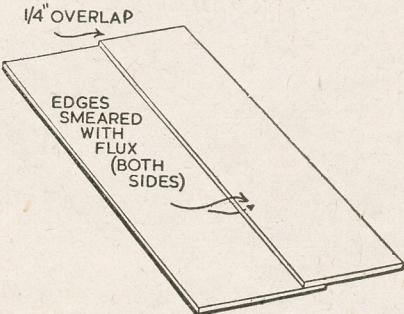


Fig. 1—A practice joint to try

soldering failures are caused by insufficient cleaning of the part to be soldered and, as a result the solder does not strike and sometimes even falls off again as it cools.

Preparation of Surfaces

Whatever the job—repair or constructive—the part to be soldered must be filed—scraped—or emered right down to the metal itself. Dirt—paint—galvanising—or discolouration must be ruthlessly cleaned off and only when the whole surface is absolutely bright and clean can you even consider trying to solder it.

This cleaning requires patience and takes up three-quarters of the time needed for a soldering operation, but you will never achieve a satisfactory job if you skimp this part. A job cannot be too clean and perseverance will pay good dividends later.

A Warning

There is one metal that cannot be satisfactorily soldered in any way—namely—aluminium, and you will only waste your time if you try. This is due to the composition of the metal in itself, and no method has yet been evolved for dealing with it.

True—there are certain liquid

compounds advertised as suitable for soldering aluminium, and may, in some cases, achieve a temporary repair, but, for all practical purposes, aluminium may be classed as unsuitable for soldering.

Care of the Iron

In order that molten solder may be picked up and transferred to the job, the tip of the iron must be tinned. "Iron"—by the way—is something of a misnomer, as actually the operative part—or bit—is made of copper.

Now—your iron may or may not be tinned when you buy it, so a word on how to tin it yourself. First—heat the iron to a dull heat in a bright fire—quickly clean the flat surfaces of the tip with a file—dip tip into flux and apply a little solder, wiping smoothly all over the tip with a piece of old rag.

Never—at any time—allow your iron to get red-hot, or the tinning will be burned off and it will require re-tinning, as per above—before you can use it. Always get the iron as hot as possible without actually getting it red-hot. Insufficient heating means extra trips to and from the fire, and, untidy soldering.

By the way—if you are using the kitchen table as a bench, always cover with thick paper as blobs of hot solder may burn the woodwork. Also—most fluxes are both highly corrosive and poisonous and may later be transferred to foodstuffs.

Soldering a Joint

Take two small pieces of metal—say about 2ins. square and thoroughly clean one edge of each to a depth of about 1in. on both sides. Next, mark a $\frac{1}{4}$ in. margin on one piece and, while your iron is heating, smear a liberal coating of flux all over the cleaned edge on both sides. Put your two pieces together, the edges overlapping up to the $\frac{1}{4}$ in. mark (Fig. 1).

You have made a simple joint—your surfaces are clean-covered with flux, and you are ready for your first attempt at soldering.

See your iron is the correct heat—quickly dip the tip into the flux to clean it—and touch lightly your stick of solder. You will find that a small blob of solder will adhere to the tip of the iron. In order that the maximum heat may be transferred to the job, let the flat of the iron rest along the line of solder (Fig. 2) and—starting at the end farthest away from you, move slowly and evenly along the joint.

The solder will spread smoothly as you progress, and you should try to do the full length in one operation. If your effort does not look very

presentable, it is due to one or more of the following reasons—

Faults and Remedies

1. You run out of solder before completing the joint—dip deeper into your stick of solder before commencing. In the case of a long seam—or an iron too small to retain sufficient solder—melt off a few small blobs from the stick and place at suitable intervals along the joint.

2. The surface is rough and uneven after soldering—your iron is not hot enough—or you used it at an angle that brought only the tip in contact with the job—or—your movement with the iron was not regular and steady.

3. The solder does not readily adhere to the job—either the surface has been insufficiently cleaned or the flux has been applied too sparingly.

4. The iron will not pick up solder—tinning faulty or burned-off by overheating—treat iron as previously indicated.

It will help if you hold the pieces in position with the tip of a file to prevent them moving during soldering.

If you have faithfully observed the rules as outlined, you should now

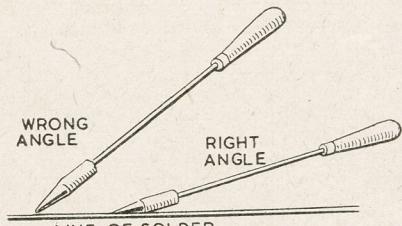


Fig. 2—Correct use of the iron

have a strong smoothly finished joint that should stand bending. Test it yourself.

After any soldering operation, always clean off the flux, as otherwise it would eat into the metal. A brisk rub over with a damp piece of rag will easily remove all traces. Burn the rag after use.

Finally—do not be discouraged if your first attempt is not too successful. Faults can be remedied—clumsiness turned into neatness by diligent practice—and you will be able to repair those leaking pans and buckets.

Remember that cleanliness is the watchword of the successful solderer.

The next article
will be on simple things to
repair in the home

Having made our Home Press, here are some necessary PRINTING ACCESSORIES

CERTAIN accessories needed to practice the art of printing can be made at home without expense. For instance, type cases (which are rather dear to purchase now), also a composing stick. Both these are dealt with in this article, and should prove helpful to those, who having made or bought a small printing press, desire, not unnaturally, to start printing with it.

Small founts of type can be purchased quite reasonably, and the cases to hold them made from any suitable wood handy. Small cases only are required for small founts of type, and the size given in Fig. 1 will serve nicely. Interior dimensions are given, so that any reasonable thickness of wood can be used for the case sides and bottom without amending the figures.

The Tray

First make a tray, as at A, with sides and ends $\frac{3}{4}$ in. high, using a simple tongued and slotted corner joint, as seen in the diagram. For the bottom, a thin wood like fretwood or plywood is really best, but as these are both in short supply, moderately thin deal could be utilised.

A few pieces of tongued and grooved $\frac{1}{2}$ in. thick matchboarding

each joint, dab a little glue on the ends and bottom edges, and press in the tray.

If the case is for holding a fount of type composed of capital and lower case letters, instead of capitals only, the case should be made double, though two of these single cases used side by side can be used if the size of the double cases is inconvenient.

The Composing "Stick"

When setting up the type a composing stick is really necessary. It is held in the hand, and when the type is set in lines it is lifted out and transferred to the chase. Fig. 2 shows how to make this desirable accessory from $\frac{1}{2}$ in. or $\frac{3}{16}$ in. fretwood, C, being the "stick" minus the slide.

It can be made, say, 8ins long, or any length convenient, the two pieces of wood being fixed together at right angles with glue and small fretwood nails. It is usual for the slide to be at the right end, though in

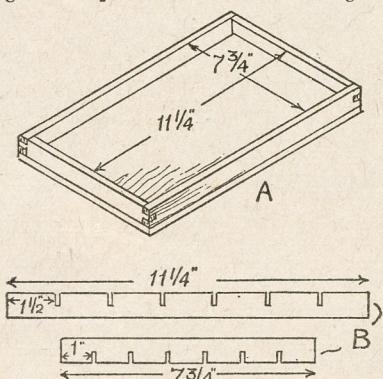
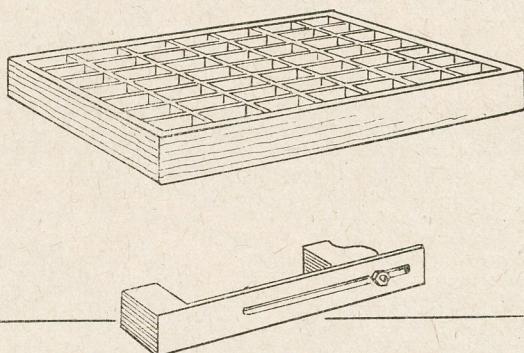


Fig. 1—The shallow tray and its partitions

would suit nicely. Glue together and fix to the tray firmly with small screws. Cover the inside surface of the tray bottom with a sheet of thin white papered cardboard.

For the division pieces, cut 6 of each of the long and short strips of wood, shown at B, from $\frac{1}{2}$ in. by $\frac{3}{16}$ in. fretwood. On one of each set out the slots, which are $\frac{1}{8}$ in. wide and $\frac{3}{16}$ in. long, spaced as shown. The first spaces only are dimensioned, but the remainder are the same.

Now cramp each lot of 6 divisions together, and saw out the slots through the whole 6 at once. Fit them together with a spot of glue to

the drawing, C, it would apparently be at the left.

Metal Faced Block

It is not really a matter of moment, but as it is more convenient to arrange for it to the right the end block should be the opposite end to that shown in the drawing, where it has been reversed inadvertently.

The block is a solid piece of wood, well glued and screwed at the end. The inner face of this should be covered with sheet metal, fixed with two countersunk small screws. The slide, D, is of the same height and width as the block, but a little

longer. It is shaped as shown.

Into this a screw bolt, like that seen in E is driven in tightly. It should project about $\frac{1}{2}$ in. and, of course, enters the slot in the "stick" where it can be moved along to suit the length of type line to be set. The inside surface of the slide is also faced with metal, like the block.

An important point is to make sure both block and slide form true rightangles to the stick. This can be tested by moving the slide until it touches the block, when both surfaces should close evenly together.

The Roller

Another important accessory to the printing craft is the roller. This is covered with a special composition, obtainable from any printing stores. A hand roller is often used, even where a self-inking arrangement is in force. It is used for inking the types, preparatory to pulling a proof, and, of course, for all the inking when the press is of simple home construction.

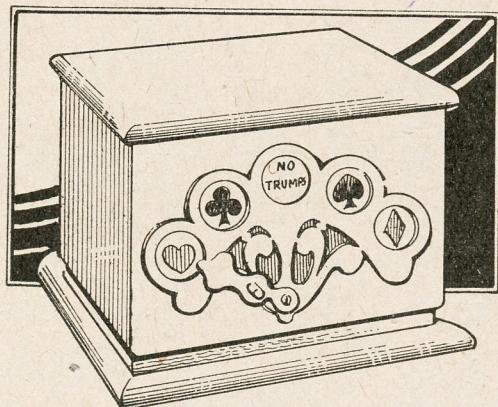
Having decided on the required length of the roller, the "length" being that part to be covered by the composition, cut the roller stock $1\frac{1}{2}$ ins. longer. The stock can be a round metal rod, $\frac{1}{2}$ in. diameter for a roller up to 6ins. long. A mould will be needed in which the composition can be cast.

A useful mould is sketched at F, Fig. 3, a length of brass tubing $\frac{1}{2}$ in. longer than the length of the roller. The diameter of the tubing should be $\frac{1}{2}$ in. to $1\frac{1}{2}$ ins. according to the roller's length, inside diameter. This is closed at both ends by discs, cut from $\frac{1}{2}$ in. plywood.

As shown in the diagram, the discs are centrally bored to admit the stock,

(Continued foot of page 10)

A Trump Indicator can be added to the front of this PLAYING CARD BOX



THE novelty Card Box and Indicator given here should be very popular with our readers. It is just the kind of thing that can be made up and given away as a birthday gift or for sale at a bazaar or sale of work. Wood $\frac{1}{4}$ in. thick is used for all parts, except the decorative overlay on the front which may be of thin wood or composition.

The box is $5\frac{1}{2}$ ins. long, $2\frac{1}{2}$ ins. wide and 4ins. high. On the front of it, as may be seen in the sketch, Fig. 1, there is a movable indicator pivoted to point to any desired suit. The trumps consist of stout paper or card, or even thin metal discs with the motifs painted on. These discs are recessed into circles cut in the overlay, a full-size pattern for which is included here, together with the indicator hand.

First Operations.

Commence work by marking out and cutting the front and back of the box, as piece A in Fig. 2. Each measures $4\frac{3}{4}$ ins. by $3\frac{1}{4}$ ins. and care must be taken to get the angles square so an accurate fit is made later on when the sides are glued up. The ends, B, measure $3\frac{1}{4}$ ins. by $1\frac{1}{4}$ ins. and they are glued between the front and the back of the box, as Fig. 2 shows.

The floor, C, is next made, measuring $4\frac{1}{2}$ ins. by $1\frac{1}{2}$ ins. A good fit should be made so it fits flush with the bottom edges of the sides and ends. Its position can be seen in the broken section of the box (Fig. 2), and in the circled diagram on the right of it.

At this stage, when the glue has hardened, all the outer surfaces should be rubbed down on coarse and fine glasspaper. Get a flat stout board and glue a sheet of this glasspaper each side. It forms an admirable surface for the process of

rubbing down. The open top edges of the box should also be made level on this board, and the rounded lower edges outside can readily be done on the same board.

The base section, D, is next made, measuring $4\frac{1}{2}$ ins. by $1\frac{1}{2}$ ins. It is glued beneath C, care being taken to keep to an equal margin all round, see piece D in the enlarged detail in Fig. 2.

Yet another floor piece is added, to give a good solid foundation to the box. The piece, E, measures

$5\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. and after it has been cut square to this size, the top edges are rounded to a "thumb" moulding. Glue the piece to D and let the glue harden before cutting the shallow hinge recesses in the top edge of the back of the box. The depth of these recesses should be sufficient to take the whole hinge so it will not be necessary to cut recesses in the lid which will thus fit down flat and even with the sides and ends.

The Lid

The lid, F, measures 5ins. by $2\frac{1}{2}$ ins., and the edges should be rounded off neatly as shown. Take care to get an even overlap to the lid all round by first screwing the hinges to the box and then by holding the lid in place and marking where the hinge flaps come on it.

The overlay is given as a full-size

pattern in Fig. 3. Whatever material is used, accuracy and care in the cutting must be exercised, as the finished appearance so much depends upon this. If wood is used for the indicator hand, see that the grain runs the length of the pattern for the sake of strength. It need hardly be mentioned that as fine a saw as possible should be used for cutting both overlay and indicator. The indicator hand is put on with a round-head screw, a $\frac{1}{2}$ in. diameter washer of thin felt or rubber being sandwiched between the overlay and the hand. A short piece of $\frac{1}{8}$ in. rod inserted and glued into the handle would help the movement of it from place to place.

The trumps are painted on thin wood or paper and cut round neatly with scissors to fit the circular openings designed for them.

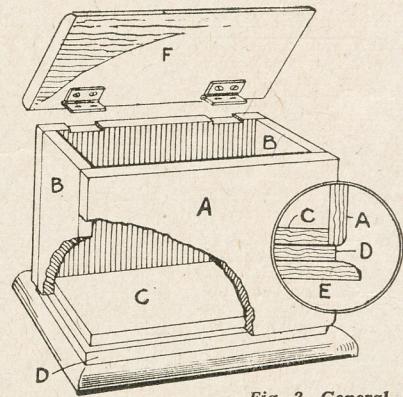


Fig. 2—General view of box construction.

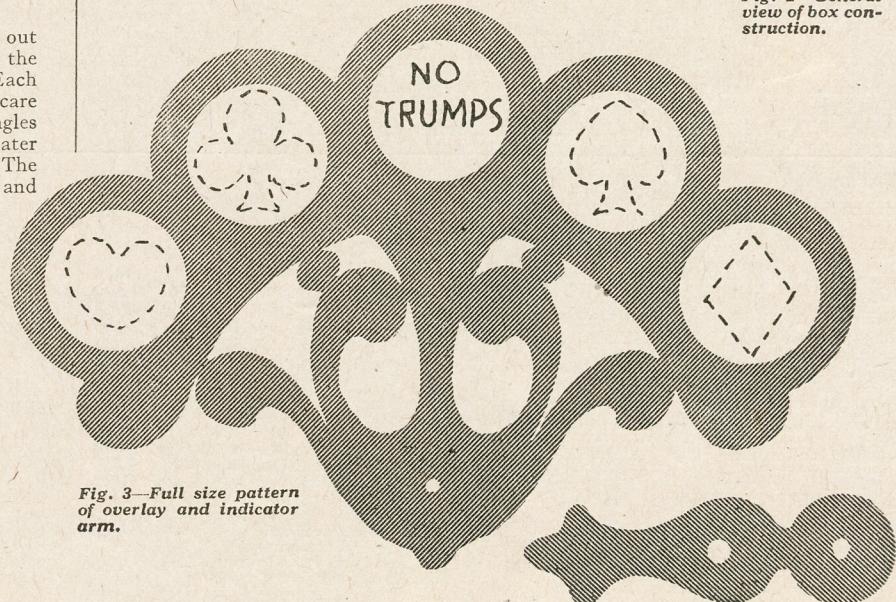


Fig. 3—Full size pattern of overlay and indicator arm.

Two handy articles to make for the fisherman are a FISHING STOOL AND REST

TWO pieces of equipment which every fisherman should have are a folding stool and a rod rest. Both can be made at home and are well worth the trouble taken.

The drawing at Fig. 1 shows the folding stool which is made up in 1½ in. by ¾ in. hardwood such as ash or oak, selecting pieces which are straight grained and free from knots. Plane to size and give the corners a small chamfer to remove any roughness.

Leg Struts

The top rails are fixed to the sides, using 2 in. No. 10 brass countersunk head screws. Holes for these must be bored in the rails and legs, and the screws should be rubbed with a candle end or dipped into melted paraffin wax before driving them home.

A strut is fitted to each pair of legs

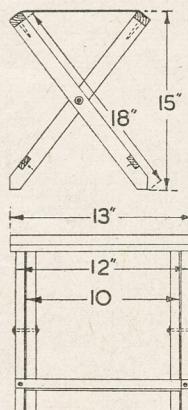


Fig. 1—Details of stool

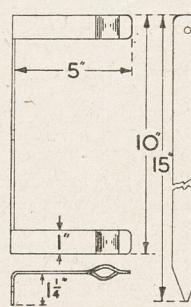


Fig. 2—Rod rest parts

as shown, and is cut from 1 in. by ¾ in. hardwood. It can either be dovetailed into the legs or screwed and lapped.

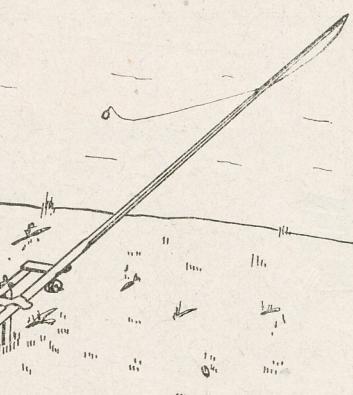
Iron rivets, ¼ in. in diameter are used to pivot the two pairs of legs. Washers ½ in. thick are used between the frames to give a clearance when folding.

Thin washers are used under the rivet heads and also at the opposite end where the rivets are buried over. A strip of deck-chair canvas is used for the seat and is tacked along the underside of the frame top rails, using ½ in. improved upholstery tacks.

When completed, open the stool and stand it on a flat surface. Check that it rests securely without rocking, trimming the bottoms of the legs as required until it is quite firm.

The rod rest is shown at Fig. 2. This is made in aluminium or Duralumin, though the latter is rather difficult to bend. It is both light and strong and folds up for carrying about.

The rod is placed as shown above, the weight being supported in the front stirrup, with the butt held under the back one. Notice the



generous clearance given between the butt and the swivelling arm. When a 'bite' is seen, the butt can be instantly grasped to make a quick strike.

The spike is cut from ½ in. thick aluminium, and has a hole bored in the top end for the 3/16 in. Whitworth screw used as a pivot. The swivelling bracket is cut out by working down the inside of the arms with a hacksaw and along the main part with a metal cutting fretsaw. Smooth the edges well before bending, and bore the hole for the pivot screw.

Stirrups

The stirrups are formed by tapping them into shape over a broom handle and bending the lips into position in the vice. Wrap the stirrups with adhesive plastic tape, so as not to scratch the rod or damage the line.

Complete the job by fitting the pivot. This is provided with two washers and a butterfly nut for tightening. Notice that the nut is placed on the outside of the bracket so there is no possibility of catching the fingers when making a strike.

Printing Accessories—(Continued from page 8)

the top one having, in addition, two openings sawn out, one to allow the composition to be poured in, and the other, the smaller one, to let the air escape.

Mount the bottom disc on a wood block large enough for the mould to stand erect, without danger of toppling over. The central hole in the bottom disc should be continued in the block to a further depth of ½ in.

Casting the Roller

To cast the roller, first oil the interior of the tubing, then wind the stock with twine, tightly, to about 1 in. from each end. This is to 'key' the composition to the stock.

Insert the stock, with an equal amount sticking out beyond the

tubing at top and bottom. Melt the composition in a water bath, and pour carefully in the mould. Leave for some hours for the composition to set properly, then push out of the

mould. Keep for a day or two before using.

A Handle

For a handle, many readers will, doubtlessly, make up something from any suitable materials. At G, a suggestion to this effect is sketched. It consists of a pair of metal brackets screwed to a wood strip, the ends of the brackets being drilled to admit the roller stock. A wood handle is affixed to complete.

To prevent the ends of the composition rubbing against the brackets, if the stock rides along, as it may sometimes do, a good plan is to drill a small hole near each end in the stock and push through the holes a split pin.

TABLE BOOK RACK DESIGN

This week's supplement Design Sheet is for a useful and simple book rack suitable for side board or bedside table to hold half a dozen popular sized books. Wood for it (Kit No. 2762) is obtainable from Hobbies Branches for 1/9 or post free from Hobbies Ltd., Dereham, Norfolk for 2/6

CHRISTMAS CARD PATTERNS

See page 5

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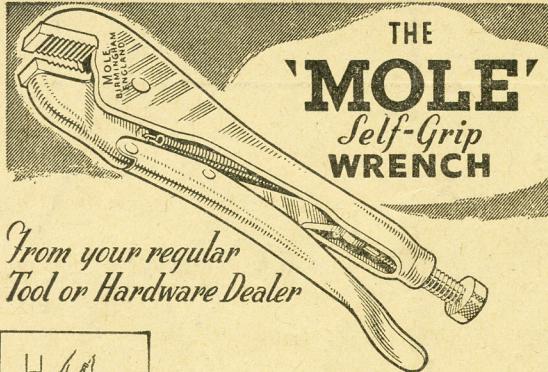


INSIDE BACK STENCIL

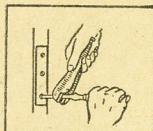


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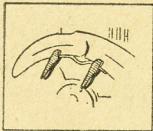
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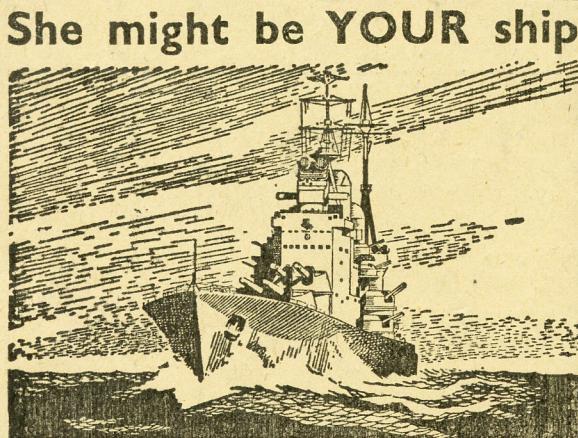
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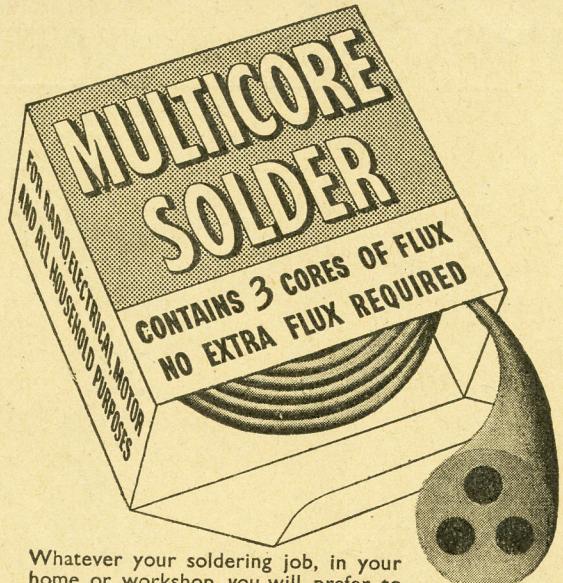
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